CHAPTER 1 - PURPOSE AND NEED FOR ACTION

1.1 What is in this Chapter?

Chapter 1 summarizes background information, the purpose and need for the project, the proposed action, applicable direction from the Gallatin Forest Plan and other policy, the scope of the proposed action and the decision to be made.

Check the glossary in Chapter 4 for word definitions.

1.2 Background

Lonesome Wood Vegetation Management proposal is an outcome of the Hebgen Watershed Risk Assessment, which was completed in November 2005. The Risk Assessment was a landscape level assessment of the risk of wildfire to a variety of resources if no management actions were taken in this area. The watershed assessment evaluated approximately 68,000 acres north, west and southwest of Hebgen Lake. The interdisciplinary team that conducted the analysis considered existing, historical, and projected future landscape conditions, and weighed these considerations with current Forest Plan management direction, as well as the current and projected social setting.

Generally speaking, the main concern for this area is wildland fuel buildup in the area, which has a high degree of recreational and urban development. Wildland fuel is live and dead vegetation on the ground and in the tree canopy that in turn poses a high fire risk. There are also opportunities to restore aspen habitats. Upon completion of the watershed assessment, a core team of resource specialists spent the summer of 2006 identifying a site specific proposed action, referred to as the Lonesome Wood Vegetation Management Proposal or Lonesome Wood.

WILDLAND URBAN INTERFACE (WUI)

The project area includes many private residences and 34 recreation residences located along the Denny Creek Road which becomes Forest Service Road (FSR) #167, also called the Hebgen Lake Road. The road is 18 miles long. The road starts out as a two-lane road off of Hwy 20 then tapers down to a very narrow dead end road. Recreation residences are authorized under special use permit from the Forest Service. There are three heavily used developed campgrounds and several dispersed campsites in the project area. The area west of Hebgen Lake was identified by the Forest Service as a wildland urban interface (WUI) at risk of wildfire because of poor access and heavy wildland fuel loadings along the Denny Creek Road and near the structures. (Hebgen Risk Assessment 2005)

Wildland Urban Interface in the Project Area.

Hebgen Lake is a summer and winter recreation destination. Less than 10 miles to the east of the project area, West Yellowstone, Montana is the western gateway community to Yellowstone National Park. Two million of three million annual visitors to the Park enter through the West Yellowstone Gate. In combination, the predominately forested environment, high degree of human development, and tourism has resulted in a very complex fire management situation.

Wildland Urban Interface (WUI) areas occur where development and wildland fuels (vegetation) meet at a well-defined boundary or are intermingled with no clearly defined boundary. In association with the National Fire Plan and associated appropriations, the Federal Register (January 2001) lists the West Yellowstone area, including this project area, as a community in the vicinity of Federal Lands that is at risk of wildfire.

In addition the Gallatin County Community Wildfire Protection Plan (GC-CWPP) identified the Hebgen Basin, which includes the Lonesome Wood project area, as WUI. Community Wildfire Protection Plans were encouraged through the Healthy Forest Restoration Act to allow local governments an opportunity to identify their WUI and develop a plan to protect the lands. The GC-CWPP identified WUI for communities at risk in Gallatin County and outlines goals and objectives to help communities "Protect life and human safety, prevent or limit the loss of property and restore and preserve our ecology." (USDA2/2004)(GC-CWPP 2007)

Two primary action items were identified as they relate to the Lonesome Wood project area. 1) Inform and educate public and private landowners of hazardous or potentially hazardous WUI areas. 2) Provide ideas and recommendations for possible hazard mitigation in high risk areas. (GC-CWPP, 2007)

Access and Evacuation: Reduce the fuel loading and hazard rating and provide continuous maintenance of the fuel load, to protect life and property in order to reduce the potential for a fire on improved property from spreading to wildland fire fuels and for a fire in wildland fuels from spreading to the structures; and to provide a safe working area and access for emergency responders.

Defensible Space Provisions of this section are intended to modify the fuel load in areas adjacent to structures to create a defensible space; to protect life and property from wildland fire, to reduce the potential for fire on improved property from spreading to wildland fuels; to provide a safe working area for fire fighter protecting life and improved property.

The Lonesome Wood Project begins to implement the recommendation for Access and Evacuation and Defensible Space.

EDUCATION

While the GC-CWPP is new, the education effort with property owners in the Lonesome Wood area has been ongoing for many years. Fuel reduction work is in progress on many of summer home lots on National Forest System (NFS) lands and on private land. Fuel reduction on permitted lots is intended to reduce the risk of structure ignition. Fuel reduction beyond the immediate cabin lots is intended to reduce the risk of

crown fire. (Anderson 2007) Over the last 10 years approximately 65 percent of the private land and home owners have made an attempt to remove hazardous fuels and create defensible space on their leased lots and/or private land. (Anderson 2007)

The Forest Service, local fire departments, and Montana Department of Natural Resources (DNRC) have joined forces to educate owners and encourage people to follow "Firewise" guidelines. (www.firewise.org) for structure protection, defensible space and evacuation routes. In the spring of 2007, these agencies hosted a meeting to encourage people to apply for grants for matching funds to implement fuel reduction projects on their property. Several landowners submitted grant applications. However, many property owners are also concerned with the dense forest and fuel build up on Forest Service land adjacent to their lots and land.

FIRE HISTORY AND WEATHER TRENDS

In the past 10 years, the Gallatin National Forest has experienced an increase in wildland fires that escape initial attack. There has been an increase in size, rate of spread and intensity making wildland fires less likely to be kept small or even controlled. Twice as many fires have started in the last decade on the Hebgen Lake District as compared to the 1980's and 90's. (Anderson 2007)

The Hebgen Lake District's 10-year (1998-2007) record shows 103 wildland fire starts with six large fires. Some of the large wildland fires that grew into large incidents were Beaver Creek (10,000 acres) in 2000, Rathbone (3000 acres) in 2003, Bakers Hole (500 acres) in 2003 and Madison Arm (3600 ac in 2007). These large fires are very costly. For example, suppression efforts for the Madison Arm Fire cost approximately 3 million dollars. (Madison Arm Fire Report, 2007)

In addition to drier climate, other contributing factors include bark beetle activity that continues to add more dead trees and fuel loading. (Novak 2007)

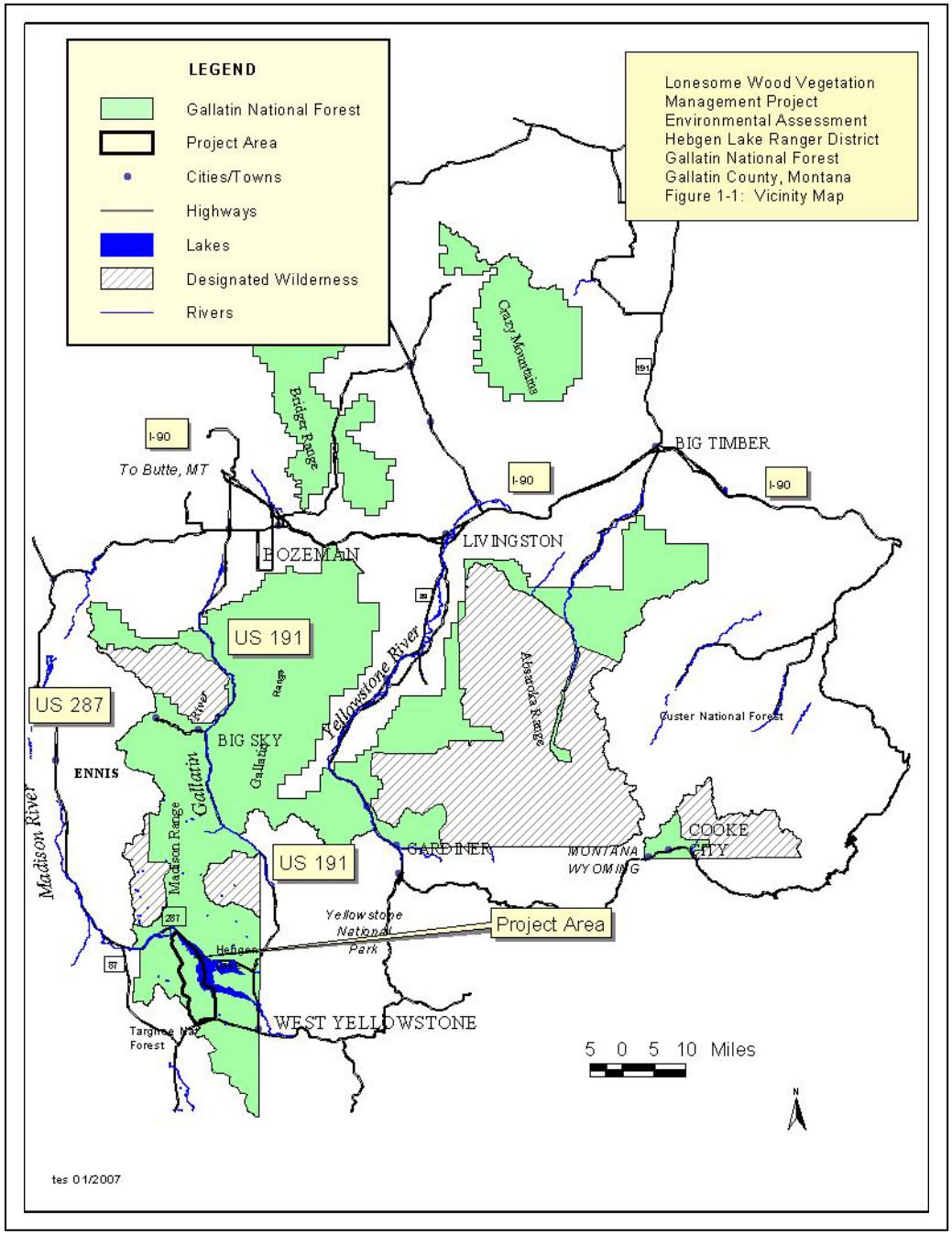
The database that tracks local weather and fire history shows a decadal increase in temperature of +2 degrees Fahrenheit since the 1980's and 90's, while the precipitation trends show a decadal average decrease of 2" during fire season. This trend is also paralleled with decreasing snow pack in the winter months and warmer temperatures. This rise in temperature and decrease in precipitation has had an influence in increased fire activity earlier in the season. (Anderson 2007)

Wildland fire starts are more likely to have a higher rate of spread and intensity when fuels are drier at the start of fire season. The Bakers Hole (7/5/2003) and Madison Arm (6/7/2007) fires are examples of early season starts with late season fire behavior. These fires had rates of spread and intensities that exhibited fire behavior typically expected in August and September.

1.3 Where is the project area?

The project area is located in Gallatin County, Montana approximately 12 miles west and north of West Yellowstone, Montana along the Denny Creek Road and the west shore of Hebgen Lake. The Hebgen Lake Ranger District, Gallatin National Forest, West Yellowstone, Montana administer the lands within the project area.

Figure 1-1: Vicinity Map



The proposed treatments are focused in the wildland urban interface on National Forest System (NFS) land including the evacuation route along the west shore of Hebgen Lake. See the Vicinity Map Figure 1-1, in this Chapter.

Management activity is proposed in portions of T. 11S., R. 3E., sections 26, 35, 36, T. 12S., R. 3E., sections 1, 12, 13, T. 12S., R. 4E., sections 17-20, 29-33 and T. 13S., R. 4E., sections 4, 8, 9, 16, 17, 20.

The treatment units proposed within the WUI extend approximately ½ mile from the structures. The distance is based on fire behavior modeling. The Behave Plus model estimated that firebrands from expected crown fire may be lofted and carried up to ½ mile away given the existing fuel conditions. (Anderson 2007)

Treatment units addressing evacuation routes are limited to approximately 400 feet either side of the roadway. The evacuation route roadway is referred to as Denny Creek Road, FSR 167 or Hebgen Lake Road throughout the EA. Fire intensity and flame length must be reduced immediately adjacent to the roadway to allow safe ingress or egress.

1.4 Why go into this area now?

1.4.1 What is the Purpose for implementing this project?

This integrated vegetation treatment project is designed to achieve the goals of increased firefighter and public safety, reduced wildland fire risks to adjacent property and Forest Service infrastructure, in lands that have been identified as WUI. The goal would be achieved with stand density thinning of crown and ladder fuels, surface fuel reduction and prescribed burning. Aspen enhancement would maintain low fire risk conditions. The treatments would reduce fire behavior, including flame length, fire intensity, rate of spread, spotting potential, and potential crown fire in the WUI and evacuation route while converting conditions to lower risk fuel models.

Figure 1-3 shows the desired outcome of treatments. The Camp 32 Wildfire burned through the area in the photo on the Kootenai National Forest. The right side of the road that bisects the photo had fuel reduction treatments prior to the wildfire. The wildfire burned through the area on the surface consuming surface fuel but leaving the trees unburned. The other side of the road was not treated with fuel reduction. The wildfire burned much hotter and killed most of the trees.

Figure 1-3: The Camp 32 Wildfire on the Kootenai National Forest.

Reducing tree density and dead material on the forest floor along the evacuation routes would allow safer ingress for emergency vehicles and egress for evacuation. The treatment would lead to lower flame length and fire intensity along the Denny Creek Road and access

roads for home groups.

Prescribed burning is proposed in areas that are currently low fire risk to maintain those conditions. In addition treatment on areas, in and adjacent to WUI, are designed to enhance and maintain aspen communities, which in turn would benefit wildlife species and maintain low fire risk areas.

Previous studies on fuel treatment efficacy use Rothermel's surface fire model and Van Wagner's crown fire model to determine fuel treatment effects on potential fire behavior (Stevens 1998; Scott 1998; Fule' et al. 2001; Brose and Wade 2002). These studies have shown that thinning treatments can reduce crown fire hazard by reducing ladder and canopy fuels. Treatments are most effective if the residual stand includes larger, more fire resistant trees (thinning from below) (Graham et al. 1999; Brown et al. 2004; Stephens and Moghaddas 2005) and if activity fuels are subsequently removed (Alexander and Yancik 1997; Stephens 1998). Applying fuel reduction treatments simultaneously to multiple fuels strata is the most effective approach to reducing fire severity (Raymond and Peterson, 2005).

Key findings from An Assessment of Fuel Treatment Effects on Fire Behavior, Suppression Effectiveness, and Structure Ignition on the Angora Fire (Murphy, Sexton. August 2007 p. 11 -17) demonstrate the effectiveness of fuel reduction treatments in achieving firefighter and public safety and property protection goals. The Angora fire burned through areas of similar fuels and fuel reduction treatments that are being proposed in Lonesome Wood.

The key findings:

- In most of the area fuel treatments reduced fire behavior from a crown fire to a surface fire.
- The fuel treatment areas adjacent to subdivisions provided important safety zones, increasing suppression effectiveness.
- The treatments implemented on lots by homeowners reduced ember production, and reduced heat and smoke allowing firefighters to be more effective.
- Fire spread into residential areas that had been treated with relatively low flame lengths.
- The majority of the trees in residential areas with treatments have unburned crowns indicating a low to moderate surface fire with no crown fire.
- Many firefighters reported increased ability to take "close-in" direct attack suppression actions because of adjacent treatments.
- Public safety was enhanced in areas with treated units by the reduction of fire intensity, surface fire and the reduction of the intensity and amount of smoke that may have occurred if the units had been untreated. Firefighters reported that this provided a greater visibility and enhanced an orderly evacuation.

1.4.2 What is the need for action?

1.4.2.1 Large crown fires with high fire intensity, dangerous flame lengths, rapid rates of fire spread and long spotting distances for firebrands are expected under the existing conditions.

Proposed stand density thinning and associated activities target the removal of excessive surface, ladder and crown fuel. This begins to address the fire

behavior concerns as described in the following paragraphs.

FIRE BEHAVIOR

Flame length has direct influence on firefighter safety, effectiveness of suppression efforts, and the ability to use evacuation routes safely. Direct attack suppression tactics are the most effective and least costly. In order for firefighters to be able to safely fight a fire directly, flame lengths must be 4 feet or less. Longer flame lengths indicate a more intense fire with more heat being released, which limits how close fire fighters can be to a fire and the likelihood of a fire crossing a fire line. Modeling of the vegetative conditions in the project area indicates a wide range of flame lengths from 4-28 feet. These flame lengths would limit safe use of the Denny Creek Road for egress or ingress and would likely result in crown fire initiation. (Anderson 2007)

Another fire behavior indicator that influences suppression tactics as well as the potential for sustained crown fire is rate of spread (ROS). Rate of spread indicates the speed in which a fire travels, measured in chains per hour. A chain is 66 feet. Fires traveling at rates in excess of 20 chains per hour threaten firefighter safety and effective suppression and increase the risk of sustained crown fire. The fuel conditions in the project area would support rates of spread ranging from 24-72 chains/hour. (Anderson 2007)

Fireline intensity and flame length are related to the heat felt by a person standing next to the flames. Fireline intensity indicates the heat output associated with a fire. Fire intensity influences firefighter safety, suppression tactics, and limit whether crown fire is sustained. It directly correlates to the appropriate size of safety zones and/or evacuation routes. Direct fire suppression tactics and the use of evacuation route/safety zone are allowable when fire intensity is less than 100 BTU (British Thermal Units) and flame length is less than four feet. Whether crown fire is sustained when fire intensity is 100-500 BTU, depends on other conditions. Due to the vegetative fuel conditions the projected fire intensity within the project area ranges 200-1800 BTU's. These intensities pose a threat to fire fighter and public safety, property and resource protection as well as safe evacuation routes. These fireline intensities would easily sustain a crown fire and the potential resource damage. (Anderson 2007)

Fuel models help to define fire behavior. Fire behavior depends on forest vegetation density, composition, and amount of surface fuel, its arrangement, moisture content, prevailing weather and physical setting. There are 13 fuel model (FM) types. These models in combination with dead and live fuel moisture content, slope and wind speed provide a basis for prediction both fire spread rate (chains per hour), intensity (flame length) and possibility of crown fire spread for this project. (Anderson 1982) Section 3.2.1 discusses fuel models in more detail.

Fire Behavior Fuel Models 10, 8, 5 and 2 are represented within and adjacent to the project area. Fuel Model 10 conditions dominate the project area. Based on fuel models, crown fire is the expected fire type in the proposed units. (Anderson 2007)

Fuel model 8 areas support a slow-burning, lower intensity ground fire with

low flame lengths, which are less likely to move into the crowns of the trees. These lower risk conditions pose less risk than FM 10 areas, however, the conditions need to be maintained so they do not move into FM 10 conditions.

Figure 1-4: Fuel Model 10 conditions in Unit 2.

Active crown fire is a fire in which the entire fuel complex becomes involved, but the crowning phase remains dependent on heat released from surface fuels. ***Passive crown fires*** are fires in which individual or small groups of trees torch out, but solid flaming in the canopy cannot be maintained except for short periods. Crown fire is more difficult than surface fire to control because of the longer flame lengths, intense heat and faster rates of spread. Crown fires typically burn more acres; are costly because they require expensive suppression tactics such as air tankers and helicopters; result in more damage to the resources such as soil and water due to fire intensity; and are very hazardous to the public and firefighters again due to fire behavior and riskier suppression tactics.

Surface and ladder fuels in Lonesome Wood are conducive to intense fire with torching that pushes a fire from the ground to the tree crowns. Surface fuels average more than 18 tons/acre in fuel model (FM) 10 areas. Ladder fuels are heavy and continuous which is represented by canopy base heights averaging less than four feet. Crown canopy fuels are continuous and lend themselves to fire spread from crown to crown for long distances and are likely to produce lofting firebrands, which in turn start new fires.

Fire behavior modeling in the proposed treatment units indicate that fuel conditions and expected fire intensity would result in active crown fire spread into or out of private land and summer home or recreation areas. (Anderson 2007) The risk of sustained crown fire is high in and adjacent to much of the WUI in this area.

Figure 1-5: Crown fire burning through the Madison Arm area in 2007.

An indicator of fire spread into or out of WUI is tied to spotting distance. Spotting distance is a distance that one can expect potential spot fires resulting

from firebrands created by torching trees, burning fuels or wind driven surface fire. It is measured in miles or feet. Depending on the fire type, flame length and fire intensity, firebrands can travel short or long distances initiating new fires or increasing a fire's rate of spread. Estimates for FM 10 areas supporting crown fire show spotting distances of 0.7-1.2 miles in most of the project area. The ideal spotting distance is 0. When the distance reaches up to .5 miles, direct suppression actions become unsafe.

Fuel Model 2 is primarily made up of cured or dead fine herbaceous fuels. FM 2 conditions generally are low risk, however, they need to be maintained so the conditions do not move into a FM8 or FM10 conditions. Portions of units 13, 18 and 30 have conditions in this fuel model. (Anderson 2007)

HAZARDS FOR FIREFIGHTERS

With the overall increased wildland fire activity, there is an increased demand for suppressing wildland fires near structures and the hazard's that come with private land and homes (gas lines, propane tanks, fences, power lines, septic tanks). There has been an increased importance of defensible areas to put wildland firefighters into for structure protection. The proposed treatments would help to provide defensible areas where firefighters can suppress a wildland fire with fewer hazards.

EVACUATION

The proposed treatments along the evacuation routes are important to ensure access for emergency personal and equipment response. Evacuation route treatments are equally as important for possible evacuation of private homeowners, landowners and forest users.

The Denny Creek Road/Hebgen lake Road provides the only road access to the west shore of Hebgen Lake and is the primary evacuation route. The route is narrow, with heavy forest fuel accumulations immediately adjacent to the road. Expected flame length and fire intensity is high along the route. Additionally, intense crown fires can generate very high winds, which may preclude evacuations by water. In these areas, continuity of surface, ladder and crown fuels would be reduced, resulting in lower fire intensity and lower flame length along roadways. This would allow additional time for safer ingress and egress.

Figure 1-6: The Denny Creek Rd – the only evacuation route.

Thinning and burning or biomass removal in the evacuation route reduces potential fire behavior such as fire intensity and flame length. The effective size of safety zones serving as evacuation routes is tied to flame length less than 4 feet, combined with fire intensity below 100 BTU's.

To improve the effectiveness of fuel treatment in the WUI and the evacuation route, fuel breaks would be created.

Within the project area, there are extensive areas of difficult terrain with small dense forest. These are important to treat; however the treatments, consisting of hand sawing and piling, would be expensive. To offset the cost of this work, some adjacent areas on slopes less than 35%, that have larger trees (over 6 inches in diameter), would be thinned. Thinning would improve the effectiveness of the adjacent units, while potentially providing some revenue to offset the cost of hand treatments.

To address this need, twenty five percent or less of six different units were added to the evacuation routes. Continuity of surface, ladder and crown fuels would be reduced, resulting in elevated canopy base height and reduced fuel continuity in all fuel strata or layers (surface, ladder and crown). The changed condition would lower fire spread rates and result in a change to expected fire type from crown fire to surface fire. While these unit extensions are beyond the 400 feet evacuation route design, they are within the recommended WUI identified in the GC-CWPP (2007).

1.4.2.2 Prescribed burn units are fairly open with non-continuous fuels. Over time these open areas are slowly being encroached by conifer trees. The encroachment reduces the effectiveness of the area as a natural fuel break.

These units designed for prescribed fire are open with timber and grassy meadows, and patches of quaking aspen. Generally, there is less risk of severe fire in this type of naturally open area. In a cured state, these fuels produce very active fire (rapid rates of spread, high intensity, and long flame lengths). When open flames encounter dense patches of low-limbed trees, firebrands may travel long distances. Torching and the risk of firebrand development would be lowered if small trees are slashed and mature trees are limbed.

Figure 1-7: Typical low risk area to be maintained by slashing and prescribed burning.

Removal of conifer trees while they are small is very low impact with minimal soil disturbance. Deferring maintenance increases the likelihood that more aggressive management may be needed in the future.

1.4.2.3 Aspen enhancement and maintenance of low fire risk –

The Hebgen Basin Watershed Risk Assessment (2006) identified aspen communities as a valuable habitat component that should be maintained or increased within the Risk Assessment area, which includes the Lonesome Wood project area. "Encourage quaking aspen regeneration throughout the analysis area. Aspen stands generally have low fire severity and provide a good fuel break within a lodgepole pine forest." (HBWRA 2006. pp. 23) "Successfully regenerating existing aspen stands within the analysis area (Hebgen Watershed Risk Assessment Area) would be beneficial, whether

through fire-use, prescribed fire, or mechanical treatments." (HWRA pp. 38)

In this Project Area, aspen stands are being encroached by conifers of various age classes. Conifer removal and/or prescribed burning are intended to reinvigorate aspen clones.

Figure 1-8: Aspen stand with conifer competition in unit 31.

Methodology and assumptions used to establish the existing condition, and determine effects of the proposed action are discussed in Chapter 3, section 3.2.1.

1.5 What is being proposed, when and by whom?

A "proposed action" is defined early in the project-level planning process. The proposed action represents a means to move from the existing condition to and desired conditions on the National Forest. This serves as a starting point for the interdisciplinary team, and gives the public and other agencies specific information on which to focus comments. Using the comments and information from preliminary analysis, the interdisciplinary team then develops alternatives to the proposed action. These alternatives are discussed in detail in Chapter 2.

1.5.1 What is proposed and by whom?

The Gallatin National Forest - Hebgen Lake Ranger District proposes to reduce forest stand density through thinning, to remove excessive dead and down trees, branches and activity related slash, and to implement slashing and prescribed burning. The proposal includes a combination of treatments on approximately 3,100 acres along the Denny Creek Road on the west side of Hebgen Lake.

Proposed treatments include:

Reduce stand density by thinning. Based on the present coniferous cover, the following preliminary prescriptions would be applied. Generally treatment would remove about 50% to 60% of the existing trees per acre in all diameter classes.

For larger trees over 10 inches diameter at breast height (dbh), spacing between trees varies. Generally in lodgepole pine stands the spacing would be 20 to 25 feet between trees. Larger Douglas-fir stands would be spaced 30-40 feet between trees. Spacing recommendations are based on Forest Vegetation Simulator (FVS) and Fire and Fuels Extension (FFE) model outputs, for thinned treatments in forest stands with larger trees. This prescription adheres to the most current direction by Forest Service pathologists in addressing insect and disease resistance. (Novak 2007)

Thinning treatments in the younger sapling to pole size (up to 10" dbh) lodgepole pine stands differ markedly from prescriptions for mature and older stands. Based on FVS and FFE (growth and stand development models) outputs, suggested treatment would thin from below about half of the present biomass, leaving around 15 to 17 feet spacing between boles for trees less than 10" in diameter.

In some units the current stand conditions are not suitable for thinning because the trees are infected with insects, disease, or the growth is very suppressed. In these units the overall stand density would be reduced by about 40% with a combination of thinning by spacing and/or creating small openings from 1/3 to 3 acres. This treatment would be implemented primarily in units where trees less than 6 inches in diameter are the majority of trees to be removed.

Existing dead and down material and activity related debris would be reduced to the Forest Plan coarse woody debris requirement of maintaining approximately 15 tons per acre, where presently available, would be applied. The stands currently contain large diameter downed logs scattered throughout the project area. It is also estimated that approximately 2 to 3 tons per acre of fine debris (needles and fine branches) would remain on the site following the mechanical treatment. This material has a high nutrient content (Daniel, T.W., Helms J. A. and Baker, F.S. 1979) that is important in these relatively infertile forest soils.

Units identified for commercial thin would have all size classes of trees removed to meet desired stand density with a majority of biomass removal occurring in the size classes at or above six inches in diameter. Trees over six inches in diameter to be removed would most likely be skidded to landings and hauled offsite for use as a commercial product such as sawlogs. A ground based logging system would be the primary method of tree removal with skidding limited to slopes less than or equal to 35%. Trees less than 6 inches in diameter may also need to be removed as described in the next paragraph or in conjunction with commercial logging.

Figure 1-9: Desired Outcome of Commercial Thin in Douglas-fir.

Units identified for small tree removal either have mixed ages or primarily small trees. The majority of trees to be removed are smaller than 6 inches in diameter. The treatment may be implemented by hand or with tracked equipment that would facilitate removal of the biomass from the landscape. Biomass could be disposed of or utilized as commercial product such as chips, posts or poles. Generally the equipment impact is expected to be less than 6 pounds per square inch (psi) on the surface. About ½ of the proposed units in this treatment type are on slopes less than 35%, on which equipment would be permitted to allow mechanized removal of biomass. Skid or access trails may be needed in these units to facilitate removal of biomass. Equipment use would adhere to Soil Best Management Practices (Appendix B). On slopes greater than 35%, the thinning and associated treatments would be expected to be implemented by hand since there is no known technology at this time that would be suitable. If technology becomes available, those options would be considered.

Nationally, there is an effort to develop a

market for biomass material. Biomass material is a byproduct of forest health and fuels reduction prescriptions. There is not a market to facilitate biomass removal around West Yellowstone at this time. If the material were marketable the Forest Service would allow removal for commercial purposes as described in the previous paragraph. This tool would utilize previously wasted material and lessen the amount of pile burning required to achieve desired fuel loadings. Congress has mandated woody biomass utilization in several significant laws. (FS Chief 1/18/2007)

Figure 1-10: Desired Outcome of Aspen Treatment. This photo was taken in a previously managed aspen stand near Rumbaugh summer homes.

Aspen enhancement. Units with Aspen enhancement objectives would be designed to meet aspen related objectives as well as fuel reduction objectives, if they are in the WUI or evacuation routes. Conifers would be removed within clones and about 1 ½ tree lengths out from the clone to help reduce competition for sunlight and water, and to stimulate sprouting. These areas would be monitored for aspen sprouting response, and if needed prescribed burns would be applied to stimulate sprouting. In areas with excessive fuel accumulation but adequate sprouting, piles would be burned as needed.

Prescribed burning. Areas with conditions that are low risk of severe fire would be maintained with broadcast burning, which reduces conifer in-growth and surface fuels. Fall and spring burning would be considered. Broadcast and pile burning would also be used to treat activity related slash.

Table 1-1: Primary Treatments of Alternative 2 (Proposed Action Alternative)

Activity	**Alternative 2 (Proposed Action) Estimated Acres**
Mechanical Thin of predominantly trees over 6" dbh along with smaller trees	1735 acres
Small Tree thin	835 acres
Prescribed Burn	440 acres
Reconstruction of old project roads or construction of new temporary road.	6.3 miles
Total Acres	Approximately 3100 Acres

Associated activities for action alternatives:

Activities may include, but are not limited to thinning through logging, yarding unmerchantable material, piling, hauling of commercial material, slashing small trees, firewood removal, biomass

reduction such as chipping, pile burning, broadcast burning, erosion control, construction of and rehabilitation of skid trails, landings and temporary roads.

The activities proposed could be implemented with Forest Service crews, service contracts, timber sale contracts and/or stewardship contracting. Value from the wood products removed and sold could be re-invested into the project area through stewardship contracting. All primary treatments, associated activities, mitigation and other restoration projects such as travel plan implementation opportunities and fish barrier installation would be considered for implementation with stewardship funding.

Additional information about the proposed action and treatments is in Chapter 2 and the Project Record.

1.5.2 When would the project be implemented?

As proposed, all project work would be completed within 8 to 12 years following a final decision. A decision is expected in 2008 with implementation to begin in 2008.

The National Environmental Policy Act (NEPA) does not establish time limits for implementation of a decision. However, FSH 1909.15, Section 18.1, provides for review of decisions awaiting implementation, as well as ongoing projects, at least every 3 to 5 years if needed.

1.6 Applicable Laws, Regulation And Policy That Set The Scope Of The Project

1.6.1 Gallatin National Forest Plan.

The Gallatin Forest Plan (1987) embodies the provisions of the National Forest Management Act, its implementing regulations, and other guiding documents. The Forest Plan sets forth in detail the direction for managing the land and resources of the Gallatin National Forest.

A summary of standards and guidelines established in the Forest Plan that are pertinent to the various resources affected by the proposal is in Chapter 3, Appendix A and the specialist reports in the Project Record. The proposed action is designed to implement the following Forest Plan goals, objectives and standards:

Forest Wide Goals and Objectives:

Provide a fire protection and use program, which is responsive to land, and resource management goals and objectives.

Use prescribed fire to accomplish vegetative management objectives.

Manage National Forest resources to prevent or reduce serious long lasting hazards from pest organisms utilizing principles of integrated pest management.

Forest Wide Objectives:

Vegetative manipulation projects, such as prescribed fire and timber harvest, will be used to maintain or improve habitat conditions.

Timber harvest will be used as a tool to carry out vegetative management activities (GNF Forest Plan pg II-5).

Emphasis will be placed on the harvest of lodgepole pine stands infested or the potential of infestation by the **mountain pine beetle**.

Forest Wide Standards:

Forest lands and other vegetative communities such as grassland, aspen, willow, sagebrush, and whitebark pine will be managed by prescribed fire and other methods to produce and maintain the desired vegetative condition. (GNF Forest Plan pg II-19)

Long-term losses caused by insects and diseases will be reduced by integrating forest pest management into project plans.

Existing wild stands may be harvested or thinned for posts, poles, or other unregulated products in all management areas where timber product removal is allowed (GNF Forest Plan pg II-23).

Activity created dead and down woody debris will be reduced to a level commensurate with risk analysis (GNF Forest Plan pg II-28).

Treatment of natural fuel accumulations to support hazard reduction and management area goals will be continued. (GNF Forest Plan pg II-19)

Prescribed fire objectives for smoke management will be met within the constraints established by the Montana State Airshed Groups' Memorandum of Understanding. (GNF Forest Plan pg II-28)

Standards for snag management and for dead and down woody material will be utilized. These standards are detailed in Appendix A-1 of the Gallatin National Forest's Management Plan. **Amendment No. 15**, written February 1993 (and supersedes Appendix A-13). Goal A for the direction of snag management is to maintain sufficient habitat components to accommodate the needs of cavity nesting birds and other snag dependent species in conjunction with the timber harvest program. Provide and sustain an average of at least 30 snags per 10 acres in forested areas. Large, broken topped trees with existing cavities are preferred that are both hard and soft and include different species and diameters (over 10" diameter and greater than 18'). Goal A for direction of down woody debris is to maintain sufficient amounts to accommodate the needs of wildlife species. Specifically, in timber sale contracts, require a minimum of fifteen tons per acre of plus three-inch debris be left scattered with the units and leave at least 2 per acre of 10" X 20' of log class 1 and 2.

Appendix A. I. Criteria for Selecting Preferred Silvicultural System: The system should develop stand conditions required to meet management area goals over the longest possible time. The system should permit enough control of competing vegetation to allow establishment of an adequate number of trees growing at acceptable rates. The system should promote stand structures, compositions and conditions that minimize damage from pest organisms, animals, wind and fire.

Forest Plan Management Areas:

The Forest Plan uses management areas (MA) to guide management of National Forest System lands within the Gallatin National Forest. Each MA provides for unique combinations of management emphasis, activities, practices and uses. The Lonesome Wood Vegetation Management treatment units are within five MA's. Management Areas in the Project Area include MA 1, 5, 7, 13, and 15. The proposed management actions are consistent with management direction outlined in the Land and Resource Management Plan (Forest Plan) for the Gallatin National Forest.

Figures 1-11 and 1-12: Management Area Map displays Management Area as they relate to the treatment units.

Management Area 1 (MA 1) includes developed campgrounds and boat ramps. Management goals are to maintain these sites for the safety and enjoyment of users. Standards allow vegetation management to provide diverse vegetative patterns and to remove hazard trees. Fuel reduction for the purpose of firefighter and public safety in these heavily used recreation sites meets management goals and standards. Safe egress is an important aspect of public safety.

MA 1 area includes approximately 2% of the proposed units.

Management Area 5 (MA 5) includes travel corridors that receive heavy recreation use. Management goals are to maintain and improve wildlife habitat values and the natural attractiveness of the areas to provide opportunities for public enjoyment and safety. The area is to be managed for timber production consistent with the first goal, which includes public safety. Standards applicable to this project to control tree damaging agents and prescribed fire may be used to meet MA goals (FP III-14 through III-16).

The project is designed to improve public safety by reducing the risk to firefighters and the public (Anderson 2007), while having minimal negative effect to wildlife and scenery (Pils 2007, Pils 2007a-j, Ruchman 2007). MA goals would be met while addressing broader forest management goals, objectives and standards.

MA5 area includes approximately 30% of the proposed units.

Management Area 7 (MA 7) These are the riparian management areas. Riparian pertains to the banks and other adjacent terrestrial environs of freshwater bodies, watercourses and surface-emergent aquifers. Manage the riparian resource to protect the soil, water, vegetation, fish, and wildlife dependent upon it. Standards include: emphasis of special logging practices which minimize soil disturbance; machine piling will not be allowed; commercial thinning and prescribed fire may be used to meet MA goals (FP, III-19 through III-29). Much of this area is not mapped because it is often a narrow zone, and therefore not practical to map. When the environs described above are found within any management area, the riparian standards would be applied.

In practice, riparian areas are protected by Best Management Practices and the Streamside Management Protection law, EA 2.4.3 and Appendix B. The proposal minimizes impact to riparian areas. (Story 2007a and Roberts 2007)

Management Area 13 (MA 13) This MA consists of forested, occupied grizzly bear habitat. These productive forest lands are available for timber harvest provided grizzly bear habitat objectives are met (FP, III-40 through III-43). Grizzly bear habitat standards in the Gallatin Forest Plan are superseded by the Forest Plan Amendment for Grizzly Bear Habitat Conservation for the Greater Yellowstone Area National Forests (USDA Forest Service 2006, pp. A-2. A-3). Potential impacts to grizzly bear habitat are discussed in the Grizzly Bear Report (Pils 2007).

The project would have minimal impacts to grizzly bear (Pils 2007) while addressing broader Forest Management

goals, objectives and standards.

MA 13 area includes approximately 62% of the proposed units.

Management Area 15 (MA 15) This MA consists of open grasslands or a mosaic of grasslands or steep rocky slopes interspersed with timber, which are located in occupied grizzly bear habitat and provide for dispersed recreation and livestock use. Grizzly bear habitat standards in the Gallatin Forest Plan are superseded by the Forest Plan Amendment for Grizzly Bear Habitat Conservation for the Greater Yellowstone Area National Forests (USDA Forest Service 2006, pp. A-2. A-3). Standards promote big game habitat improvement such as prescribed fire. Actions proposed in this MA are limited to aspen treatments that benefit WUI. The proposed treatment is limited to slashing and prescribed burning where appropriate. The standards allow harvest of post and poles and other wood products in areas adjacent to existing roads (FP, III-47 through III-49).

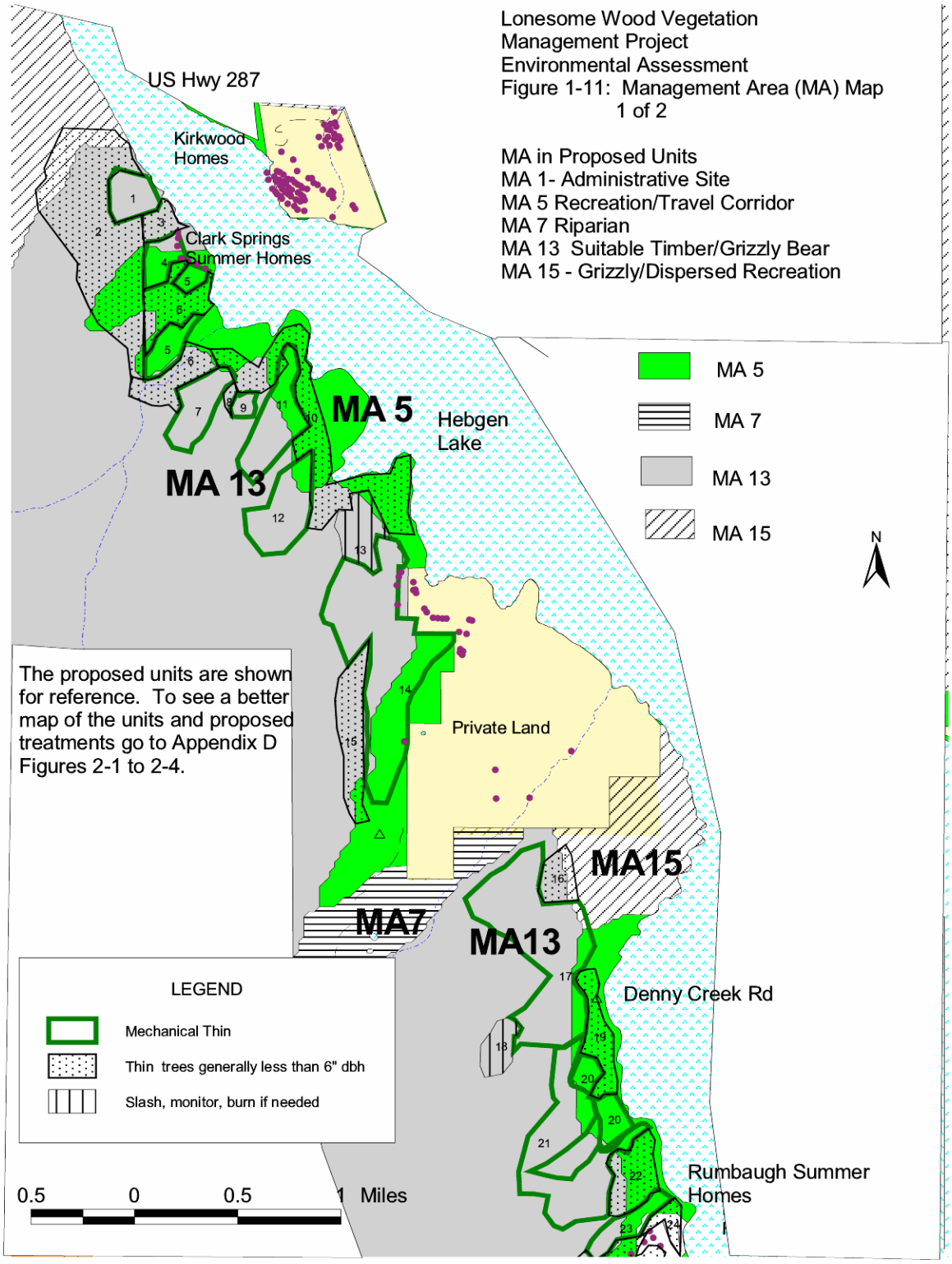
The project would have minimal, impacts to grizzly bear (Pils 2007) while addressing broader Forest Management goals, objectives And standards.

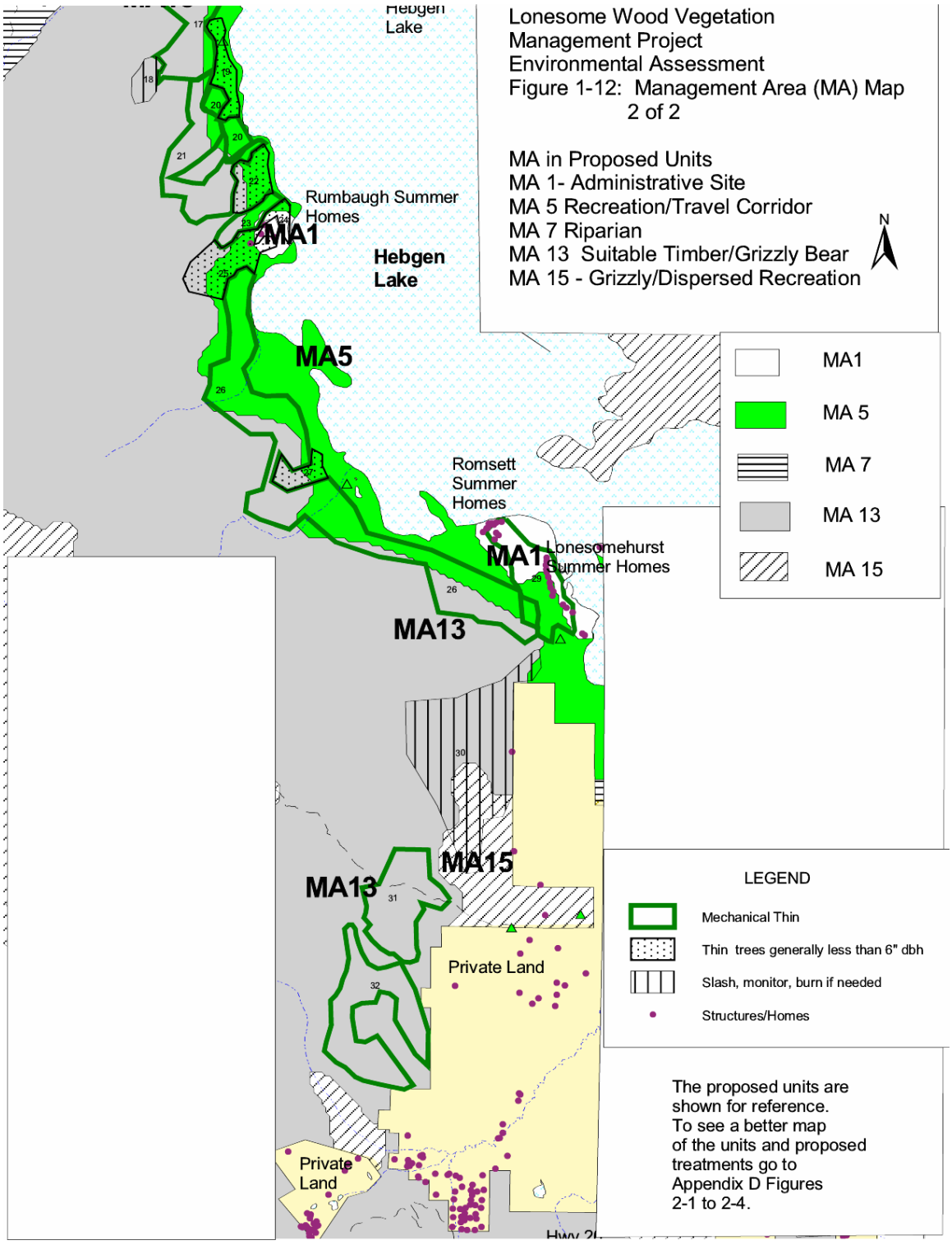
MA 15 area includes approximately 5% of the proposed units including a part of units 2, 16 and 30b.

The proposed action is designed to apply management standards to meet broader goals and objectives.

Gallatin National Forest Travel Management Plan

The October 2006 Gallatin National Forest Travel Plan decision identifies and establishes opportunities for public recreation use and access using the Forest road and trail system. For each road and trail, it specifies the type of uses that are appropriate. It also describes seasonal restrictions and programmatic direction that will provide guidance for future management proposals related to Forest Travel. This decision includes an amendment to the Gallatin National Forest Land and Resource Management Plan (Forest Plan GNF 1997) that removes outdated and/or programmatic direction relevant to forest travel. Specific standards from the Travel Plan are discussed in the appropriate resource discussions. The project adheres to the Travel Plan standards.


Lonesome Wood Vegetation
Management Project
Environmental Assessment
Figure 1-11: Management Area (MA) Map
1 of 2
MA in Proposed Units
MA 1- Administrative Site
MA 5 Recreation/Travel Corridor
MA 7 Riparian
MA 13 Suitable Timber/Grizzly Bear
MA 15 - Grizzly/Dispersed Recreation
US Hwy 287
Kirkwood Homes
Clark Springs Summer Homes
MA 5
MA 7
MA 13
MA 15
N
MA 5
MA 13
Hebgen Lake
Private Land
MA15
MA7
MA13
Denny Creek Rd
Rumbaugh Summer Homes
The proposed units are shown for reference. To see a better map of the units and proposed treatments go to Appendix D Figures 2-1 to 2-4.
LEGEND
Mechanical Thin
Thin trees generally less than 6" dbh
Slash, monitor, burn if needed
0.5 0 0.5 1 Miles


Lonesome Wood Vegetation
Management Project
Environmental Assessment
Figure 1-12: Management Area (MA) Map
2 of 2
MA in Proposed Units
MA 1- Administrative Site
MA 5 Recreation/Travel Corridor
MA 7 Riparian
MA 13 Suitable Timber/Grizzly Bear
MA 15 - Grizzly/Dispersed Recreation
N
Hebgen Lake
Rumbaugh Summer Homes
MA1
Hebgen Lake
MA5
Romsett Summer Homes
MA1
Lonesomehurst Summer Homes
MA13
MA15
MA13
Private Land
Private Land
MA1
MA 5
MA 7
MA 13
MA 15
LEGEND
Mechanical Thin
Thin trees generally less than 6" dbh
Slash, monitor, burn if needed
Structures/Homes
The proposed units are shown for reference. To see a better map of the units and proposed treatments go to Appendix D Figures 2-1 to 2-4.

1.6.2 Federal Fire Policy

Managing the Impact of Wildfires on Communities and the Environment – A Report to the President In Response to the Wildfires of 2000, also known as the '**National Fire Plan'** (NFP) sets priorities for fuel treatment. The plan directs the agency to invest in projects to reduce fire risk.

The Plan has five areas of emphasis; Key Point 3 is the applicable item for this project. NFP Executive Summary – (10/2000) pg.1):

Key point #3: Hazardous fuel reduction. Invest in projects to reduce fire risk.

Operating Principle #4: Hazardous fuel reduction. Assign highest priority for hazardous fuel reduction to communities at risk, where conditions favor uncharacteristically intense fires.

The hazardous fuel reduction in the proposed treatment units complies with this direction by identifying and prioritizing fuel treatment in the community at risk.

Since the NFP was approved, the Healthy Forest Initiative (2002) and the Healthy Forest Restoration Act (2003) have reinforced the need for fuel hazard reduction projects that focus on protection of life, property and firefighters, especially in the wildland urban interface. Although, this proposal does not utilize streamlined processes developed through those policies, the proposal is responsive to those priorities.

Cohesive Strategy (October 2000)
This Strategy responded to government studies, which recommended a need for a strategy to reduce fuel build up in the west. In response to severe fires in 1994, the 1995 Federal Wildland Fire Management Policy (Updated 2002) set the stage for an interagency effort to improve our collective ability to be better wildland fire risk managers. The plan identified priority areas for treatment including the Wildland Urban Interface and Maintenance of low risk Condition Class 1 areas.

The Project is designed to maintain low risk fire areas through low impact treatments like prescribed burning, specifically units 13, 18 and portions of 30.

2001 Review and Update of the 1995 Federal Wildland Fire Management Policy

Protection of human life is the first priority in wildland fire management. (Chapter 1, pp.2)

Where wildland fire cannot be safely reintroduced because of hazardous fuel build-ups, some form of pretreatment must be considered, particularly in Wildland Urban Interface areas. (Chapter 1, pp.3#6)

Wildland urban interface fuel reduction in this proposal if implemented, adheres to this policy by prioritizing firefighter safety and the wildland urban interface.

1.7 The Decision to Be Made

This Environmental Assessment (EA) is not a decision document. It does not identify the alternative to be selected by the Deciding Official. This document discloses the analysis and environmental consequences associated with implementing the proposed action and other alternatives. This EA provides information and analysis used to

determine whether an action results in a significant effect, and therefore, would require the completion of an Environmental Impact Statement (EIS).

The Hebgen Lake District Ranger, Bill Queen, is the Responsible Official. Based on the analysis documented in this EA, as well as comments received during the 30-day comment period, the Deciding Official will make a decision on this project. If it is determined that an EIS is not required, a Decision Notice (DN) and Finding of No Significant Impact (FONSI) will be released to document the decision and the rationale for it. Official notification of the availability of the Decision Notice and FONSI would be published in the Bozeman Chronicle (the newspaper of record).

The scope of action to be addressed in the decision is limited to actions needed to lessen wildfire risks to life and property in the identified wildland urban interface/evacuation routes in the Lonesome Wood Vegetation Management Project area, and whether to implement aspen enhancement.

More specifically, the decision to be made includes:

What, if anything, should be done to reduce wildfire risks to life and property in the identified wildland urban interface/evacuation route in the Lonesome Wood Vegetation Management Project area? What if anything should be done to enhance aspen communities in the project area?

What associated activities, mitigation measures, restoration actions and monitoring requirements would be included if the decision is to take action to reduce the threat and/or to enhance aspen?

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